AMENDMENTS TO THE SPECIFICATION

Kindly enter the changes on the following page:

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation of co-pending non-provisional patent application, Application No. 09/834,718, filed on April 16, 2001, which is a continuation of non-provisional application, Application No. 08/970,229, filed on November 14, 1997, now U.S. Patent No. 6,240,180 B1. The following applications, filed on ~~even date, herewith,~~ November 14, 1997, are incorporated by reference: ~~USSN _____ (Attorney Docket No. 11724US01),~~ Application No. 08/970,230, "Echo Canceller Employing Dual-H Architecture Having Improved Coefficient Transfer", now U.S. Patent No. 6,181,793 B1; ~~USSN _____ (Attorney Docket No. 11998US01),~~ Application No. 08/971,116, "Echo Canceller Employing Dual-H Architecture Having Improved Double-Talk Detection", now U.S. Patent No. 6,266,409 B1; ~~USSN _____ (Attorney Docket No. 1999US01),~~ Application No. 08/970,228, "Echo Canceller Employing Dual-H Architecture Having Improved Non-Linear Echo Path Detection", now U.S. Patent No. 6,028,929; ~~USSN _____ (Attorney Docket No. 12000US01),~~ Application No. 08/970,229, "Echo Canceller Employing Dual-H Architecture Having Split Adaptive Gain Settings", now U.S. Patent No. 6,240,180 B1; ~~USSN _____ (Attorney Docket No. 12001US01),~~ Application No. 08/970,639, "Echo Canceller ~~Employing Dual-H Architecture~~ Having Improved Non-Linear Processor", now U.S. Patent No. 6,198,819 B1.

On page 4, kindly delete the first paragraph and substitute the following:

echo response is illustrated here as a signal s corresponding to the following equation:

$$s = h * x$$

where h is the impulse response of the echo characteristics. As such, the signal sent from the near end to the far end, absent echo cancellation, is the signal y, which is the sum of the telephone signal v and the echo signal s. This signal is illustrated as y at line 15 of FIG. 1.

On page 15, kindly delete the second paragraph and substitute the following:

The value of E_{max} should be set to, for example, the lower bound value at the beginning of each call. Failure to do so will prevent tap coefficient transfers on a new call until the echo cancellation response of the echo canceller 25 on the new call surpasses the quality of the response existing at the end of the prior call. However, this criterion may never be met during the subsequent call thereby causing the echo canceller 25 to operate using sub-optimal tap coefficients values. Resetting the E_{max} value to a lower value increases the likelihood that a tap coefficient transfer will take place and, thereby, assists in ensuring that the $\bar{h}$ filter uses tap coefficients for echo cancellation that more closely correspond to the echo path response of the new call.

On page 17, kindly delete the first paragraph and substitute the following:

equal to the $\hat{E}$ value at the transfer instant, E_{max} may be set to a value equal to the value of $\hat{E}$ minus a constant value (e.g., one, three, or 6 dB). At no time, however, should the E_{max} value be set to a value that is below the lower bound value for E_{max}. Additionally, a further condition may be imposed in that a new softened E_{max} is not less than the prior value of E_{max}. The foregoing "softening" of the E_{max} value increases the number of transfers that occur and, further, provides more decision-making weight to the condition of $\hat{E}$ being larger than $\bar{E}$. Further details with

respect to the operation of the echo canceller coefficient transfer process are set forth in the co-pending patent application titled "ECHO CANCELLER HAVING THE IMPROVED TAP COEFFICIENT TRANSFER", Serial No. 08/970,230 filed on November 14, 1997.

On page 21, kindly delete the second paragraph and substitute the following:

A still further manner of detecting a double-talk condition is set forth in ECHO CANCELLER EMPLOYING DUAL-H ARCHITECTURE HAVING IMPROVED DOUBLETALK DETECTION (Serial No. 08/971,116), the teachings of which are hereby incorporated by reference. As set forth in that patent application, a double-talk condition is declared based on certain monitored filter performance parameters.

On page 25, kindly delete the second paragraph and substitute the following:

A further scenario in which it is desirable to alter the gain of the adaptive filter is when the echo path response is non-linear. The presence of non-linearities in the echo path encourages constant minor changes in the coefficients in order to find short-term optimal cancellation solutions. The detection of non-linearity of the echo path response preferable proceeds in the manner set forth in CANCELLER EMPLOYING DUAL-H ARCHITECTURE HAVING IMPROVED NONLINEAR ECHO PATH DETECTION (Serial No. 08/970,228), filed on November 14, 1997. The presence of a non-linear echo path is determined that step 230.

On page 27, kindly delete the second paragraph and substitute the following:

Separate and apart from the foregoing adjustments of the gain constant a, the present inventors have recognized that it may be advantageous to adapt a subset of the coefficients of the filter with a higher gain and the remaining coefficients with a smaller gain. To understand the motivations for doing this, consider a scenario in which the echo canceller 25 must converge to a linear echo-path. Since some flat-delay is to be expected, the span of time covered by the

coefficients of the filter should be larger than the expected duration of the echo-path response. As a result, several of the taps (and in many cases, the majority of the taps) of the filter will have an expected value of zero to model the flat-delay while a small subset of the taps called "significant" taps will need to adjust very quickly in order to model the linear echo-path response.

Kindly replace the previous page 37 with the following:

ABSTRACT OF THE DISCLOSURE

An echo canceller circuit is set forth. The echo canceller circuit includes a digital filter having adaptive tap coefficients to simulate an echo response occurring during a call. The adaptive tap coefficients are updated during the call using a Means Squares process. A tap energy detector is also employed. The tap energy detector identifies and divides groups of taps having high energy from groups of taps having low energy. The high energy tap groups are smaller in number than the low energy tap groups. The high energy tap groups are adapted separately from the low energy tap groups using the Least Squares process. Still further, the high energy tap groups may be adapted using an adaptive gain constant a while the low energy tap groups are adapted using an adaptive gain constant a', wherein $a > a'$.